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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,634	02/05/2004	Jahir Pabon	26.0265 US	5659

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EXAMINER	
LUKS, JEREMY AUSTIN	
ART UNIT	PAPER NUMBER
2837	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/772,634	PABON ET AL.	
	Examiner	Art Unit	
	Jeremy Luks	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,21-35 and 37-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16, 21-35 and 37-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-16, 21-35 and 37-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arian (6,564,899) in view of Hoyle (5,036,945), Meehan (2002/0080682) and Chung (Re. 33,837).

With respect to Claims 1-15, 21-34 and 37-47, Arian teaches an acoustic logging tool (Figure 1, #10) comprising a central rigid mandrel (Figure 10, 86); a plurality of spaced mass blocks (164) comprising an inner diameter bearing against an outer diameter of the mandrel (86) in an interference fit; a plurality of acoustic elements (160, 162) attached to each of the plurality of spaced mass blocks (164); and a plurality of axially discontinuous, alternating circumferentially continuous first and second acoustic impedance zones (132, 134) (Col. 9, Lines 28-39); wherein each of the plurality of sonic elements (160, 162) is axially aligned with one of the second zones (132) (see plurality of modules in Figure 19); wherein each low acoustic impedance zone (134) is aligned axially with one or more of the acoustic elements (160, 162); wherein the first zone comprises a metal band and the second zone acoustically transparent comprises an elastomeric band (Col. 9, Lines 28-64); wherein the second (Figure 20, #186) and fourth (184) hollow cylinders are aligned with acoustic elements (200, 202) of a sonic logging

tool; and an acoustically smooth outer sleeve covering the plurality of spaced mass blocks (164) and sonic receivers and comprising first and second zones (See Figure 9 outer sleeve, and first and second acoustic impedance zones (Figure 19, 180) covering the plurality of spaced receiver blocks and acoustic receivers (178). The Examiner considers the configuration in Figure 19 to be covering the receivers. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to cover the spaced receiver blocks with the first and second impedance zones, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70. Arian further teaches a first supporting ring (134) coaxial with and attached to the first hollow metallic cylinder (86); a second supporting ring (132) coaxial with and spaced axially from the first support ring (134); and a second hollow cylinder (136) disposed between the first (134) and second (132) supporting rings; a third hollow metallic cylinder (Figure 20, see portion of #86 below #200) opposite of the second hollow cylinder (186); a third supporting ring (see ring near #190, corresponding to #124 in Figure 10) coaxial with and attached to the third hollow metallic cylinder (86); a fourth supporting ring (see ring near #188, corresponding to #122 in Figure 10) coaxial with and spaced axially from the third support ring (190); and a fourth hollow cylinder (184) disposed between the supporting rings (rings near #190, 188); and wherein the first (86, above #200) and third (86, below #200) hollow metallic cylinders each comprise an acoustic impedance at higher than the second (186) and fourth (184) hollow cylinders (Col. 9, Lines 28-64). Arian fails to teach wherein the acoustic elements are receivers; and oil disposed in an annulus between the central mandrel and the outer sleeve, the oil comprising an acoustic impedance matched to

borehole fluid, and the oil is pressurized to match a borehole environment; wherein each low acoustic impedance zone comprises an acoustic impedance substantially matching borehole fluid; and wherein the mandrel is hollow and defines a wiring conduit; wherein the first and third hollow metallic cylinders each comprise an acoustic impedance between twice and at least ten times as high as the second and fourth hollow cylinders; wherein the first and second cylinders and the metal and elastomeric band are separable for maintenance and repair; a second hollow cylinder is sandwiched between the first and second supporting rings, and comprising an acoustic impedance matched to an acoustic impedance of a borehole fluid the oil comprising an acoustic impedance matched to borehole fluid. Further, Arian fails to teach a third hollow metallic cylinder attached to the second supporting ring. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to attach the third hollow metallic cylinder to the second supporting ring, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70. Hoyle teaches wherein acoustic elements are receivers (Figure 5C, #C10); wherein the mandrel is hollow and defines a wiring conduit (Figure 5C, #C3); oil disposed in an annulus (Figure 5D, #C9) between the central mandrel and the outer sleeve, wherein the oil is pressurized to match a borehole environment (Col. 9, Line 46 – Col. 10, Line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Arian, with the apparatus of Hoyle to protect the tool from the extreme pressure normally experienced by such tools when disposed in oil well boreholes. Meehan teaches alternating zones of high and low impedance bands (Figures 3A and 3B, #303) (Page 3, [0045]) wherein the first and third hollow

metallic cylinders each comprise an acoustic impedance between twice and at least ten times as high as the second and fourth hollow cylinders when used in combination (Page 2, [0021], [0025]). Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the first and third hollow metallic cylinders each with an acoustic impedance between twice and at least ten times as high as the second and fourth hollow cylinders, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working range involves only routine skill in the art. In re Aller, 105 USPQ 233. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Arian as modified, with the apparatus of Meehan to deliberately create stopbands over particular frequency ranges in order to suppress noise in these frequency ranges. Chung teaches a hollow cylinder (27, 124) is sandwiched between two elements (the first and second supporting rings when used in combination), and comprising an acoustic impedance matched to an acoustic impedance of a borehole fluid the oil and the oil and low acoustic impedance zone when used in combination comprises an acoustic impedance substantially matching borehole fluid (Col. 6, Lines 1-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Arian as modified, with the apparatus of Chung to prevent damage from potential pressure or impedance differences within the borehole and casing. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the first and second cylinders and the metal and elastomeric band separable, since it has been held that constructing a formerly integral

structure in various elements involves only routine skill in the art. Nerwin v. Erlichman, 168 USPQ 177, 179.

With respect to Claims 16, 35 and 47, Arian teaches an outer sleeve with multiple modules (Figure 19), each module comprising a first hollow metallic cylinder (Figure 10, #86), a first supporting ring (134) coaxial with and attached to the first hollow metallic cylinder (86); a second supporting ring (132) coaxial with and spaced axially from the first support ring (134); and a second hollow cylinder (136) disposed between the first (134) and second (132) supporting rings. Arian fails to teach wherein the second hollow cylinder comprises elastomer, resin, or both elastomer and resin. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a second and forth hollow cylinder comprising elastomer, resin, or both elastomer and resin, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Response to Arguments

2. Applicant's arguments with respect to claims 1-16, 21-35 and 37-47 have been considered but are moot in view of the new ground(s) of rejection. The examiner considers the prior art of record to teach all of the limitations as claimed by Applicant.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pertinent arts of record relating to acoustic logging tool sleeves are disclosed in the PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy Luks whose telephone number is (571) 272-2707. The examiner can normally be reached on Monday-Thursday 8:30-6:00, and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Class 181

LINCOLN DONOVAN
SUPERVISORY PATENT EXAMINER